# EXPERIMENT - 14

## Object Oriented Programming Lab

### Aim

Write a program to generate a Fibonacci series using Copy Constructor.

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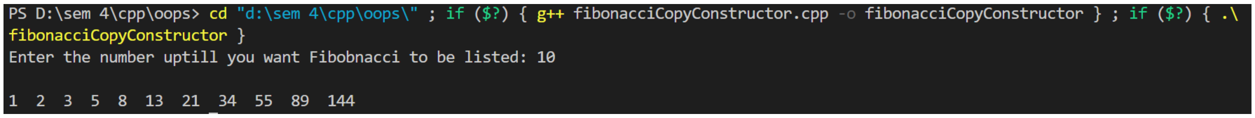
## Aim:

Write a program to generate a Fibonacci series using Copy Constructor.

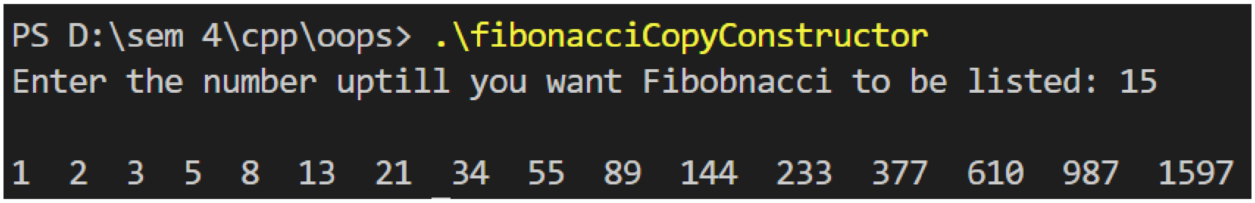
## Source Code:

```
#include <iostream>
using namespace std;

class fibonacci{
    private:
        unsigned long int f0, f1, fib;

    public :
        fibonacci(){
            f0 = 0;
            f1 = 1;
            fib = f0 + f1;
        }

        void update(){
            f0 = f1;
            f1 = fib;
            fib = f0 + f1;
        }

        void displayFib(int upto){
            for (int i = 0; i <= upto; i++) {
                cout << fib << "  ";
                update();
            }
        }
}; //end of class construction


int main(){
    fibonacci fibObj;
    int upto;
    cout << "Enter the number uptill you want Fibobnacci to be listed: ";
    cin >> upto;
    cout << endl;
    fibObj.displayFib(upto);
    cout << endl;

    return 0;
}
```

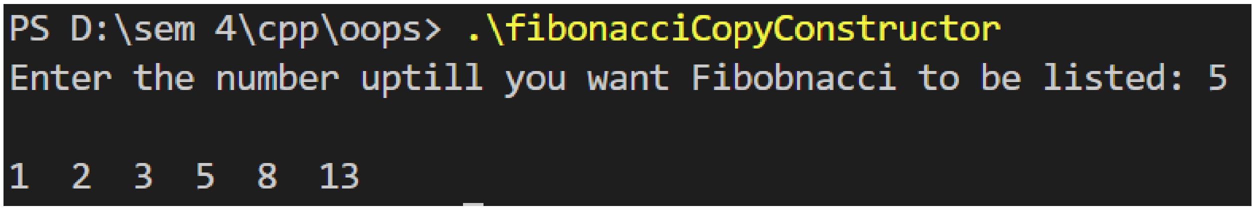
## Output:



```
PS D:\sem 4\cpp\oops> cd "d:\sem 4\cpp\oops\" ; if ($?) { g++ fibonacciCopyConstructor.cpp -o fibonacciCopyConstructor } ; if ($?) { .\
fibonacciCopyConstructor }
Enter the number uptill you want Fibobnacci to be listed: 10

1  2  3  5  8  13  21  34  55  89  144
```



```
PS D:\sem 4\cpp\oops> .\fibonacciCopyConstructor
Enter the number uptill you want Fibobnacci to be listed: 15

1  2  3  5  8  13  21  34  55  89  144  233  377  610  987  1597
```



```
PS D:\sem 4\cpp\oops> .\fibonacciCopyConstructor
Enter the number uptill you want Fibobnacci to be listed: 5

1  2  3  5  8  13
```

## Viva Questions

### *Q1) Can a copy constructor accept an object of the same class as a parameter, in place of reference of the object? If No, why not possible?*

Ans.

No. It is specified in the definition of the copy constructor itself. It should generate an error if a programmer specifies a copy constructor with a first argument that is an object and not a reference.

### *Q2) Are Constructors and destructors can declare as const?*

Ans.

Constructors and destructors can’t be declared as const or volatile. They can, however, be invoked on const or volatile objects.

### *Q3) Can we make a copy constructor private?*

Ans.

Yes, a copy constructor can be made private. When we make a copy constructor private in a class, objects of that class become non-copyable. This is particularly useful when our class has pointers or dynamically allocated resources.

## *Q4) Can you explain the order of execution in the constructor initialization list?*

Ans.

When a class object is created using constructors, the execution order of constructors is:

- Constructors of Virtual base classes are executed, in the order that they appear in the base list.
- Constructors of nonvirtual base classes are executed, in the declaration order.
- Constructors of class members are executed in the declaration order (regardless of their order in the initialization list).
- The body of the constructor is executed.